

Introduction of microorganisms

- A microbe is too tiny to be seen with the naked eye (2 μm long).
- a size visible sometimes only with a microscope (tiny dot).
- Microbes live in the water you drink, the food you eat, and the air you breathe.
- the oldest form of life on Earth. Some types have existed for billions of years.

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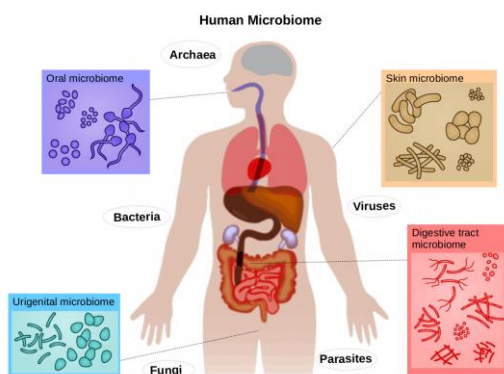
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Relationship of microorganisms with human

- There is a close connection between microbes and humans.
- Microbes occupy all of our body surfaces, including the skin, gut, and mucous membranes.
- For millions of years, our resident microbes have coevolved and coexisted with us in a mostly harmonious symbiotic relationship.
- The microbiome playing a significant role in our physiology and health.
- The mouth houses the second most diverse microbial community in the body, harbouring over 700 species of bacteria that colonise the hard surfaces of teeth and the soft tissues of the oral mucosa.
- Through recent advances in technology, we have started to unravel the complexities of the oral microbiome and gained new insights into its role during both health and disease.

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Some microorganisms cause human disease. Other microorganisms are used in making cheese, yogurt, and bread. Based on this information, the relationship between humans and microorganisms can be

- (1) beneficial, only
- (2) harmful, only
- (3) beneficial or harmful

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Classification of microorganisms

➤ Microbes are very diverse and represent all the great kingdoms of life.

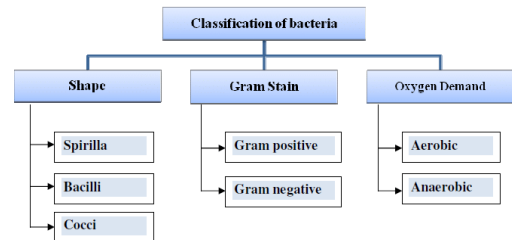
➤ To help people understand the different types of microbes, they are grouped or classified in various ways.

- Viruses
- Bacteria
- Algae
- Fungi
- Protozoa

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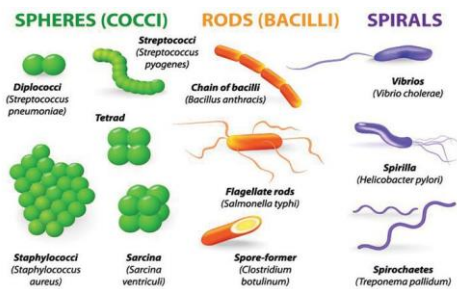
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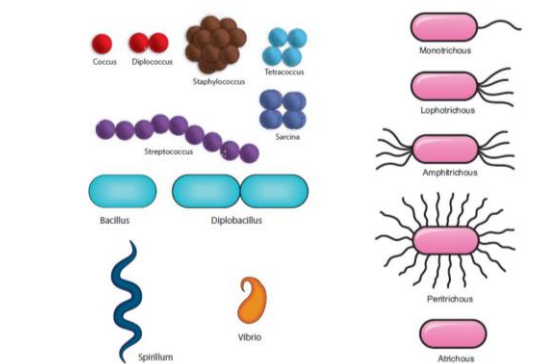


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Shape and arrangement

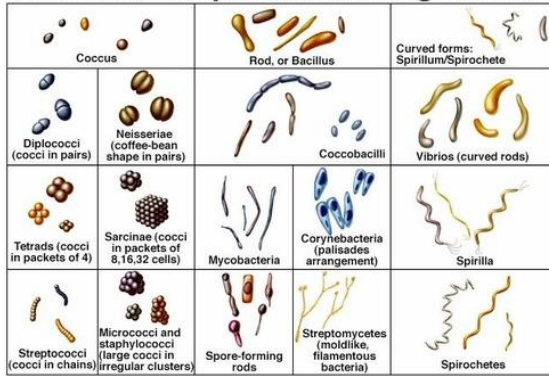


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Bacterial shapes and arrangements



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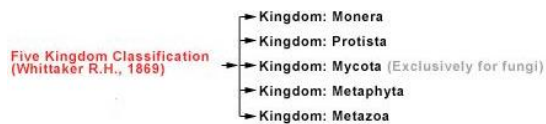


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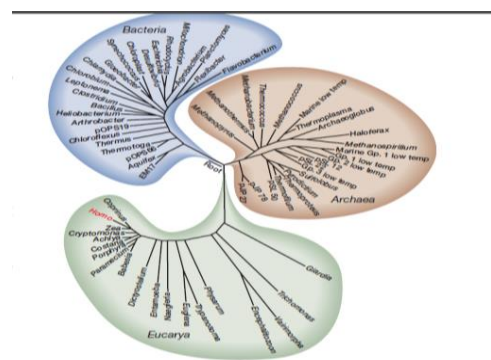


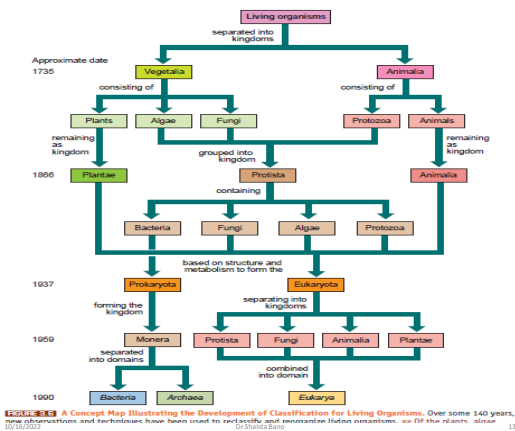
Figure 1.1 Universal Phylogenetic Tree. These evolutionary relationships are based on rRNA sequence comparisons. Man (*Homo sapiens*) is highlighted in red.

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Life's 5 Kingdoms

| | | | |
|----------------|------------------|------------------------|-----------------|
| Monera | Prokaryotic | one-celled | some move |
| Protist | Eukaryotic | one celled many celled | some move |
| Plant | Eukaryotic | many-celled | don't move |
| Fungi | Eukaryotic | one celled many celled | don't move |
| Animal | Eukaryotic | many celled | move |
| | Cell Type | Structure | Movement |

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Discovery of microorganisms (History of Microbiology)

Antony van Leeuwenhoek

1632-1723



Francesco Redi

1626-1697



Redi's Experiments Refute Spontaneous Generation. Francesco Redi carried out one of the first biological experiments by placing a piece of meat in an open jar and another in a jar covered with gauze. Maggots arose only in the open jar because flies had access to the meat where they laid their eggs.

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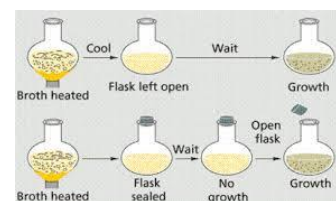
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John Needham

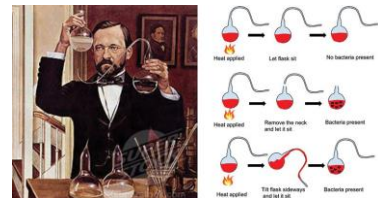
1713-1781



Louis Pasteur

1822-1885

CONCLUDED THE CONTROVERSY



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